National Highway Traffic Safety Administration
Office of Defects Investigation

Notice to Purchasers of Replacement Hydraulic Disc Brake Rotors for truck and bus applications about the importance of evaluating the corrosion protection needed for replacement (service) rotors

Purpose -

The purpose of this notice is to alert purchasers of replacement disc brake rotors for trucks and busses equipped with hydraulically-actuated brakes and AntiLock Braking Systems (ABS)* of the importance of considering the severity of the vehicle's exposure to corrosive materials (such as road salts) when determining whether disc brake rotors that are "coated" (for protection against corrosion) or disc brake rotors that are uncoated (not protected against corrosion) are more suitable for use as replacement parts.

Background -

During 2002 and 2003, the Office of Defect Investigations (ODI), within the U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA), investigated several incidents in which trucks and busses equipped with uncoated hydraulic disc brake rotors had corroded prematurely due to exposure to salt and other corrosive elements. ODI's investigation found that corrosion had degraded the tooth profile of the ABS tone ring and compromised the quality of the ABS wheel speed signal. Vehicle stopping distances increased in certain cases when this condition had not been corrected in a timely manner.

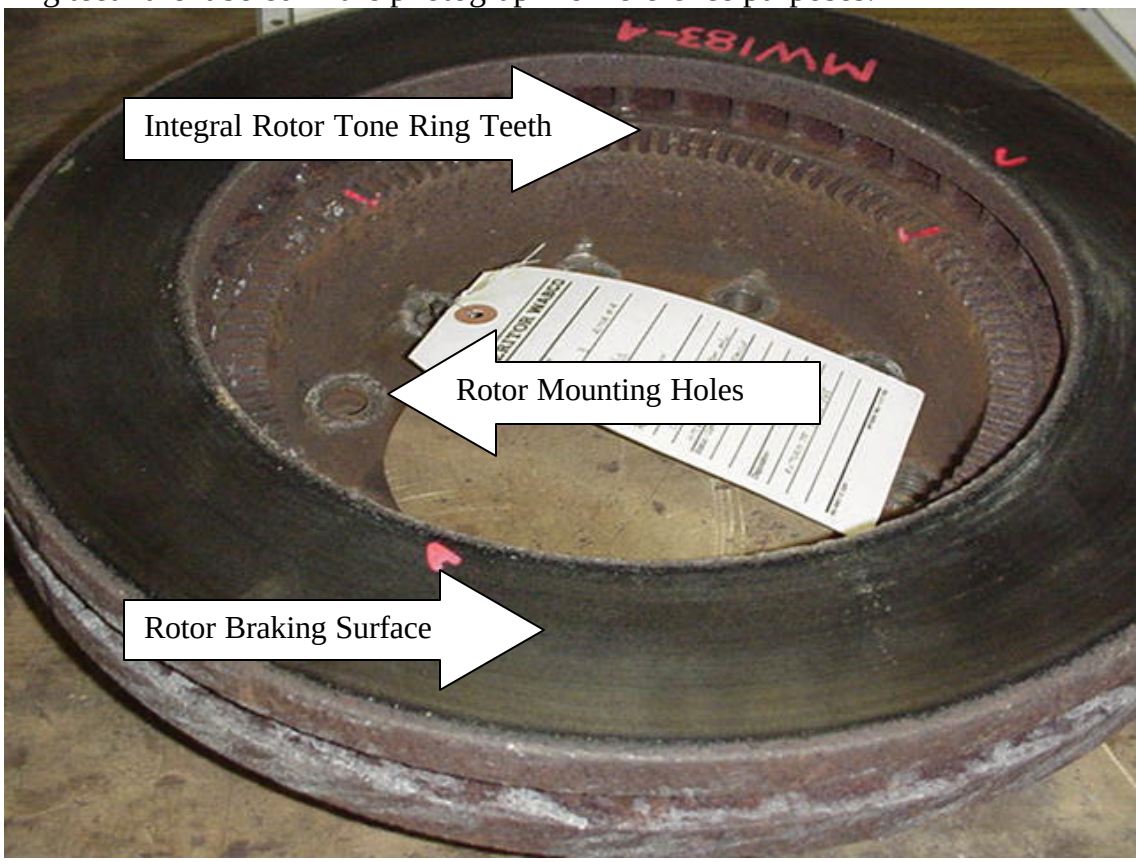
Details -

If corrosion deteriorates the tone ring tooth profile to the point where the quality of the wheel speed signal has been compromised, the ABS warning lamp should illuminate when the vehicle is operated over the threshold speed of 3-5 MPH. The illuminated warning lamp is intended to provide an obvious visual warning to the operator that the vehicle's ABS requires service. If the vehicle ABS is not serviced soon after the lamp illuminates, the vehicle stopping distance may be affected.

(*) 49CFR 393.55 requires that "each truck and bus manufactured on or after March 1, 1999 (except trucks and buses engaged in driveaway-towaway operations), and equipped with a hydraulic brake system, shall be equipped with an antilock brake system that meets the requirements of Federal Motor Vehicle Safety Standard (FMVSS) No. 105 (49 CFR 571.105 , S5.5)."

During the ODI investigations, ODI expressed concern that vehicle owners purchasing replacement hydraulic brake rotors for vehicles equipped with ABS may inadvertently purchase uncoated rotors where coated rotors are more appropriate for the vehicle's operating environment. In applications involving minor to moderate exposure to corrosive elements, the uncoated rotor may provide acceptable service life before replacement is required. However, if an uncoated rotor is purchased for a vehicle that is exposed to high levels of corrosive elements, the tone ring teeth may corrode prematurely and shorten the useful life of the rotor.

The following photograph depicts a representative uncoated disc brake rotor with the integral tone ring feature that has been removed from service. The ABS tone ring teeth are labeled in the photograph for reference purposes.



Source: Sample from rotors examined on March 11, 2003 at the National Highway Traffic Safety Administration (NHTSA) Vehicle Research Test Center (VRTC).

The following photograph depicts severe (progressed) stages of corrosion on the tone ring teeth of representative uncoated hydraulic disc brake rotors due to exposure to a corrosive operating environment.

Severe (progressed) Stage of To ne Ring Corrosion

Source: Sample from rotors displayed at March 11, 2003 Review at VRTC.

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